

- Congratulations on your purchase of the ONKYO EQ-540 Graphic Equalizer. • Please read this manual thoroughly before making connections and turning power on.
- Following the instructions in this manual will enable you to obtain optimum performance and listening enjoyment from your new EQ-540. • Please retain this manual for future reference.

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## Features

### • Independent Left and Right Channel Level Adjustment for Twelve Frequency Bands

The EQ-540 has twelve (left/right) pairs of level controls with center frequencies ranging from 16Hz to 32kHz. The very low and very high (16Hz and 32kHz) frequency controls double as sub- and ultrasonic filters. Each level control has its own LED indicator, enabling the user to check the current response setting even from a distance. The slider-type controls, situated side by side for the left and right channels, enhance control accuracy and make it easy to maintain balance between channels.

### • Built-In Test Frequency Generator for Accurate Level Setting

The EQ-540 can generate both warble and fixed tone test signals in two different modes: "spot" and "stepped" sweep. Using warble test tones minimizes the influence of standing waves and natural room resonances, so much more accurate level settings are possible than with conventional fixed frequencies. In spot mode, the test frequency rises in single steps each time you press a key. In the stepped sweep mode, the unit generates test signals consecutively at each center frequency from 32Hz to 16kHz. In both modes the corresponding LED indicators light and the fluorescent display provides a digital readout of the frequency being tested. Test signals may be generated simultaneously in both channels or in each channel separately.

## "WARNING"

"TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE."

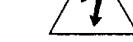
## CAUTION

"TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER (OR BACK). NO USER-SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL."



## Important safeguards

1. **Read Instructions** – All the safety and operating instructions should be read before the appliance is operated.
2. **Retain Instructions** – The safety and operating instructions should be retained for future reference.
3. **Heed Warnings** – All warnings on the appliance and in the operating instructions should be adhered to.
4. **Follow Instructions** – All operating and use instructions should be followed.
5. **Water and Moisture** – The appliance should not be used near water – for example, near a bathtub, washbowl, kitchen sink, laundry tub, in a wet basement, or near a swimming pool, and the like.
6. **Carts and Stands** – The appliance should be used only with a cart or stand that is recommended by the manufacturer.
7. **Wall or Ceiling Mounting** – The appliance should be mounted to a wall or ceiling only as recommended by the manufacturer.
8. **Ventilation** – The appliance should be situated so that its location or position does not interfere with its proper ventilation. For example, the appliance should not be situated on a bed, sofa, rug, or similar surface that may block the ventilation openings; or, placed in a built-in installation, such as a bookcase or cabinet that may impede the flow of air through the ventilation openings.
9. **Heat** – The appliance should be situated away from heat sources such as radiators, heat registers, stoves, or other appliances that produce heat.



- The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.



- The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

10. **Power Sources** – The appliance should be connected to a power supply only of the type described in the operating instructions or as marked on the appliance.
11. **Grounding or Polarization** – The precautions that should be taken so that the grounding or polarization means of an appliance is not defeated.
12. **Power-Cord Protection** – Power-supply cords should be routed so that they are not likely to be walked on or pinched by items placed upon or against them, paying particular attention to cords at plugs, convenience receptacles, and the point where they exit from the appliance.
13. **Cleaning** – The appliance should be cleaned only as recommended by the manufacturer.
14. **Nonuse Periods** – The power cord of the appliance should be unplugged from the outlet when left unused for a long period of time.
15. **Object and Liquid Entry** – Care should be taken so that objects do not fall and liquids are not spilled into the enclosure through openings.
16. **Damage Requiring Service** – The appliance should be serviced by qualified service personnel when:
  - A. The power-supply cord or the plug has been damaged; or
  - B. Objects have fallen, or liquid has been spilled into the appliance; or
  - C. The appliance has been exposed to rain; or

D. The appliance does not appear to operate normally or exhibits a marked change in performance; or  
 E. The appliance has been dropped or the enclosure damaged.

## Precautions

### 1. Warranty Card

The serial number is written on the rear panel of this unit. Copy the serial number and model number onto your warranty card and keep it in a safe place.

### 2. Care

From time to time you should wipe off the front and rear panels and the cabinet with a soft cloth. For heavier dirt, dampen a soft cloth in a weak solution of mild detergent and water, wring it out dry, and wipe off the dirt. Following this, dry immediately with a clean cloth. Do not use rough material, thinners, alcohol or other chemical solvents or cloths since these could damage the finish or remove the panel lettering.

### 3. Accessory Microphone

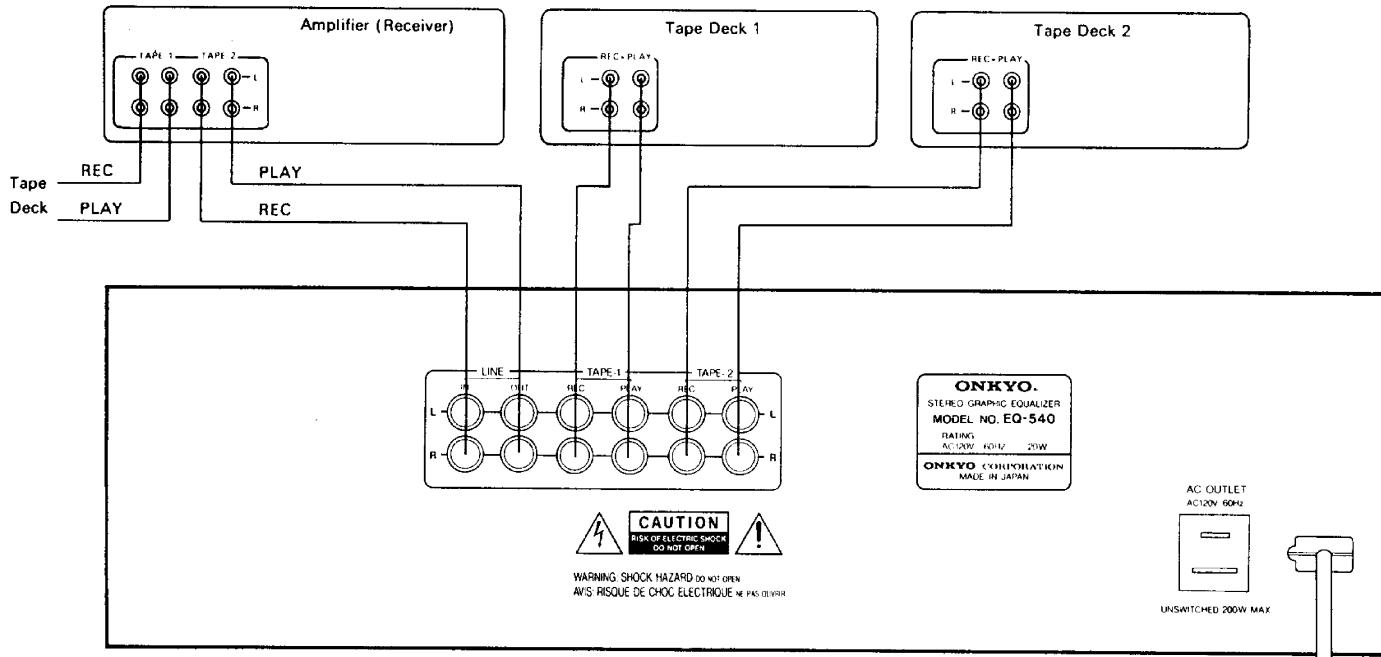
#### Battery

The microphone is powered by a battery. Before using this microphone for the first time, insert the battery (included) as shown in the diagram. Whenever the microphone is not in use, be sure to set its ON/OFF switch to OFF. In case the microphone is left ON, the average life of its battery is about 500 hours. The battery lasts from two to three years during ordinary use, but its life may be shorter due to frequent use or environmental conditions (temperature or humidity). If no microphone output can be obtained or noise is produced, please replace the battery with a new one conforming to the table below.

Type	Voltage	Size
Manganese	1.5 Volt	AA R6 UM-3

**Note:** 1. Do not leave an expired battery in the case as it may leak or damage the battery case.

## System connections

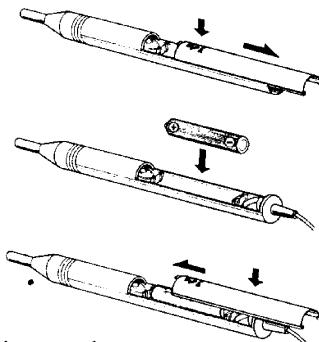


On each pair of input or output jacks, the lower jack (marked R) corresponds to the right channel, and the upper jack (marked L) to the left channel. When jacks on other equipment or connection cables are color coded, the color red usually corresponds to the right channel.

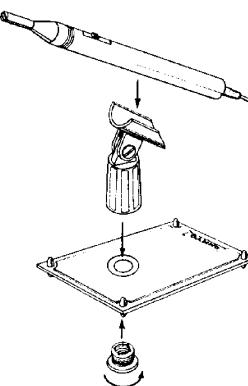
**17. Servicing** – The user should not attempt to service the appliance beyond that described in the operating instructions. All other servicing should be referred to qualified service personnel.

- When inserting the battery, be sure the (+) and (-) ends are properly aligned.
- Do not use nickel-cadmium (rechargeable) batteries.

### Battery Replacement

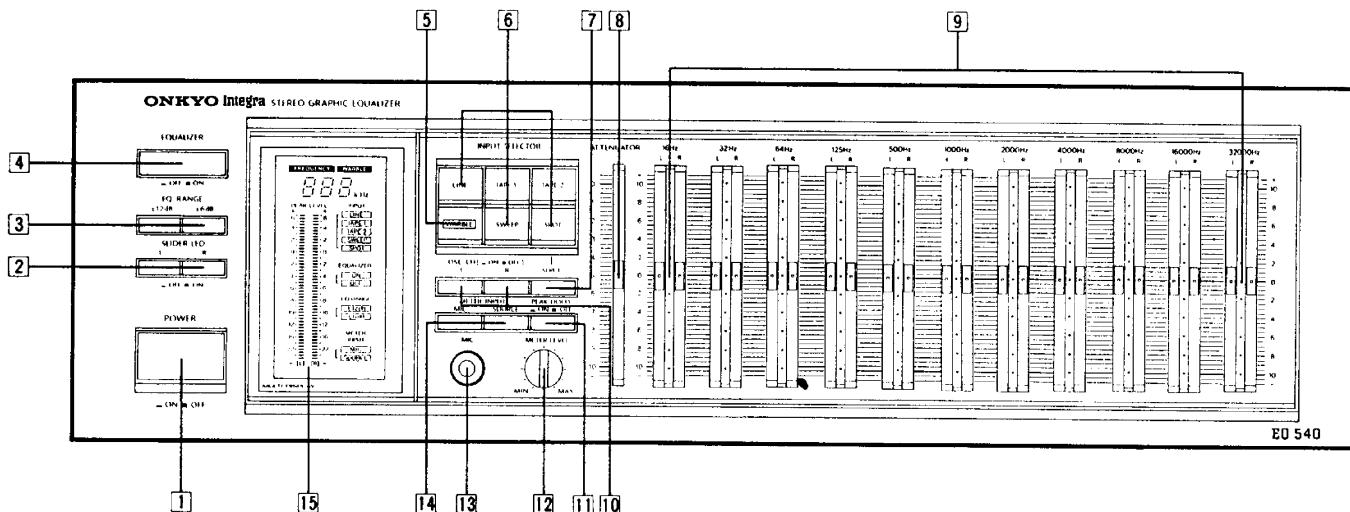


### Assembly of the stand



Do not plug in the power cord until all connections have been made.

## Front panel facilities



### 1 Power Switch and Indicator (POWER)

Press once to turn power ON and once again to turn power OFF. When power is turned OFF, set the Equalizer Switch **4** to the OFF position or the Tape monitor switch of the amplifiers to the SOURCE position.

### 2 Level Controls and Attenuator Indicator Switches (SLIDER LED)

Use these switches to turn the left and right level control indicators separately on and off. However, the attenuator indicator goes out only when both switches are off.

### 3 Equalizer Range Switch (EQ RANGE)

Use these switches to set the range of equalization to 6dB or 12dB.

### 4 Equalizer Switch (EQUALIZER)

Press to the OFF position to turn off the equalization effect set by the level controls. In the ON position, the program source is equalized according to the settings of level controls.

### 5 Warble Mode Switch (WARBLE)

While the SWEEP or SPOT switch of the Input Selector Switches **6** is pressed, press this switch to add a Warble effect to the oscillator output.

### 6 Input Selector Switches (INPUT SELECTOR)

LINE: Press to equalize the signal from the amplifier connected to the rear panel LINE INPUT terminals.

TAPE-1: Press to equalize the signal from the tape deck connected to the rear panel TAPE-1 PLAY terminals.

TAPE-2: Press to equalize the signal from the tape deck connected to the rear panel TAPE-2 PLAY terminals.

SWEEP: Press to sweep the spot oscillator frequency from 32Hz to 16kHz. When the frequency reaches 16kHz, the frequency will automatically switch back to 32Hz and continue to sweep as before.

SPOT: When this switch is depressed, a spot frequency is generated.

The oscillator frequency is shown by the fluorescent frequency display **15** and the level control indicators **9**.

### 7 Spot Frequency Shift Switch (SHIFT)

When the Spot Switch **6** is pressed, first, a test signal of 32Hz is generated. Then, each time this switch is pressed, the frequency moves up one step. In this mode, the frequency goes in steps from 32Hz to 16kHz and then back to 32Hz.

### 8 Attenuator and Indicator (ATTENUATOR)

Use this control to adjust gain to any point between 0 and -20dB. Gain is 1 when the attenuator control is at the top

attenuator concurrently affects both the L and R channels, but does not function while the Equalizer Switch **4** is OFF.

### 9 Level Controls and Indicators

Each control raises and lowers the response of the frequency range centered at the frequency written above the control. Above the center "0" click stop position, response is emphasized; below the "0" position, response is attenuated. The level control frequency is also linked to the oscillator.

### 10 Oscillator Channel Switches (OSC CH)

While the SWEEP or SPOT switch of the Input Selector Switches **6** is pressed, press these switches to select the channel(s) to which the oscillator output is to be added. Also, the Level Control Indicator(s) of the channel(s) to which the oscillator output is added illuminate, and the Peak Level Meter(s) operate.

### 11 Peak Hold Switch (PEAK HOLD)

Press this switch to hold the peak value being displayed at the Peak Level Meter **15** for approximately 1.5 seconds.

### 12 Meter Level Control (METER LEVEL)

This control adjusts the display level of the Peak Level Meter **15**. Turn the control fully right for the maximum display level.

### 13 Microphone Jack (MIC)

Connect the accessory microphone to this jack.

### 14 Level Meter Input Selectors (METER INPUT)

SOURCE: Displays the output signals of the equalizer at the Peak Level Meter **15**.

MIC: Displays the volume of the sound received over the microphone at the Peak Level Meter **15**.

### 15 Fluorescent Display (FREQUENCY, PEAK LEVEL, etc)

This displays the oscillating frequency of the oscillator, the peak level values, and the mode setting of each switch.

## Operations

### Normal Equalization

- To hear the equalized signal from the amplifier, press the LINE mode of Input Selector Switches [6] and set the Equalizer Switch [4] to the ON position.
- To hear the unequalized signal from the amplifier, press the LINE mode of Input Selector Switches [6] and set the Equalizer Switch [4] to the OFF position.
- To hear the equalized signal from the tape deck 1 (or 2) connected to the rear panel TAPE-1 (or 2) terminals, press the TAPE-1 (or 2) mode of Input Selector Switches [6] and set the Equalizer Switch [4] to the ON position.
- To hear the unequalsized signal from the tape deck 1 (or 2) connected to the rear panel TAPE-1 (or 2) terminals, press the TAPE-1 (or 2) mode of Input Selector Switches [6] and set the Equalizer Switch [4] to the OFF position.

### Recording

- To record the equalized signal on the tape deck 1 (and/or 2) connected to the rear panel TAPE 1 (and/or 2) terminals, press the LINE mode of Input Selector Switches [6] and set the Equalizer Switch [4] to the ON position.
- To record the unequalsized signal on the tape deck 1 (and/or 2) connected to the rear panel TAPE-1 (and/or 2) terminals, press the LINE mode of Input Selector Switches [6] and set the Equalizer Switch [4] to the OFF position.

### Dubbing

- Tapes can be dubbed (copied) from the tape deck 1 (or 2) to the tape deck 2 (or 1) connected to the EQ-540. To perform dubbing, put the original tape in the tape deck 1 (or 2) and the blank tape in tape deck 2 (or 1). Then set the Input Selector Switches [6] to the TAPE-1 (or 2) position and start playback of the first deck and recording of the second deck.

If you wish to add the equalizer effect to signals that will be used for dubbing, set the Equalizer Switch [4] to ON; if not, set the switch to OFF.

### Level Setting

When the SWEEP or SPOT switch of the Input Selector Switches [6] is pressed, the equalizer input will consist of test signals of 32Hz to 16kHz frequency in place of the usual program source. These test signals can be used to perform the level setting of the equalizer.

- For level setting while checking by ear  
If the Input Selector Switches [6] are set to SPOT, then each time the Spot Frequency Shift Switch [7] is pressed, a Level Control Indicator [9] corresponding to the frequency of the input test signal sequentially lights up. Use the respectively lit Level

Controls to adjust the sound from the speakers to the same volume as each frequency. If the levels are not properly adjusted at the first attempt, repeat this adjustment procedure until all levels are properly set.

- For level setting using the accessory microphone  
First, position the microphone to face the direction of sound reception, then set the Level Meter Input Selectors [14] to MIC mode. If the Input Selector Switches [6] are set to SPOT, a Level Control Indicator [9] corresponding to the frequency of the test signal sequentially lights up. Use the respectively lit Level Controls to adjust the deflection of the Level Meter to match each frequency. If the levels are not properly adjusted at the first attempt, repeat this adjustment procedure until all levels are properly set.

### NOTE:

Besides the test signals, the microphone may pick up noise from the surrounding which is possibly caused by improper level setting. In case the deflection of the Level Meter changes only slightly with the presence or absence of test signals, perform level setting after turning off the source of the noise. Assuming that the reference level of the test signals is "0" on the Level Meter, there should be no problem if the meter deflection corresponding to the noise level is -10 or lower.

When setting is completed, the level of each frequency can be confirmed quickly in the SWEEP mode. Depending on the room conditions and the type of speaker system in use, a large peak or dip may occur for specific frequencies. If this happens, adjustment will be facilitated by setting the Warble Mode Switch [5] to ON.

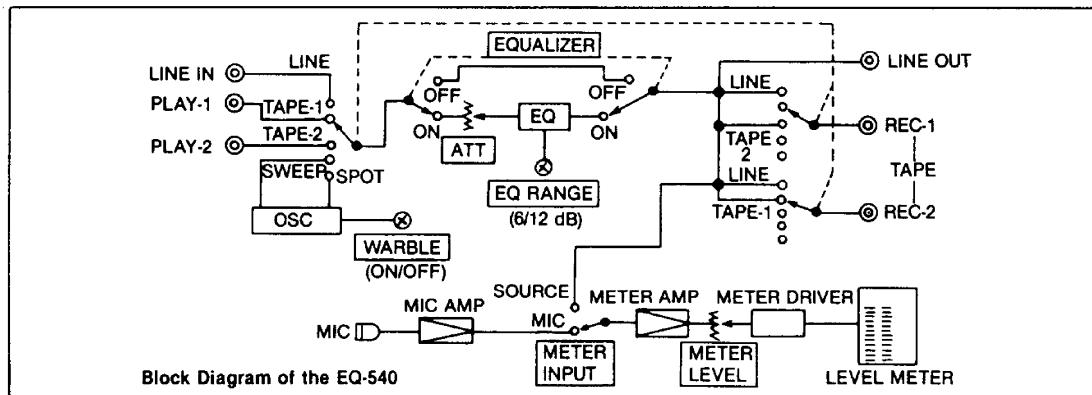
### NOTES:

- It takes some time for the oscillator to stabilize. When the SWEEP, STOP, and WARBLE switches are pressed, wait 5 seconds or more before using a test signal for level setting.
- Certain types of speakers may be damaged by large input of a single frequency over an extended period. Make sure to complete the level setting within a short time, using the lowest possible input.
- If level setting is performed using a microphone, use only the dedicated microphone provided and never use other microphones.
- If the level meter flickers and setting is difficult when using the microphone to set the level, set the Peak Hold Switch [11] to ON and make the adjustment.
- The microphone is a delicate mechanism. Make sure never to handle it roughly or drop it.

## Troubleshooting guide

Problem	Cause	Remedy
No power.		<ul style="list-style-type: none"><li>• Contact Onkyo dealer.</li></ul>
Power, but no sound.	<ul style="list-style-type: none"><li>• Bad connection.</li></ul>	<ul style="list-style-type: none"><li>• Check input and output pin plugs.</li></ul>
Hum, low frequency noise.	<ul style="list-style-type: none"><li>• Poor or no input and/or output ground.</li></ul>	<ul style="list-style-type: none"><li>• Check outer conductor of input and/or output plugs.</li></ul>
Howling when the volume is turned up.	<ul style="list-style-type: none"><li>• Turntable and speakers are too close together.</li><li>• Low frequency level controls are set too high.</li></ul>	<ul style="list-style-type: none"><li>• Move them farther apart.</li><li>• Lower level control settings until howling stops.</li></ul>
Rough or scratchy sound; high range not clear.	<ul style="list-style-type: none"><li>• High frequency level controls are set too high.</li></ul>	<ul style="list-style-type: none"><li>• Lower level controls as much as possible.</li></ul>

### **Block diagram**



## **Specifications**

### [Equalizer section]

Input:	Sensitivity (FLAT):	150 mV
Output:	Impedance:	50 kohms
	Voltage (FLAT):	150 mV
Max. output	Impedance:	1 kohm
Frequency response	More than 5 V, 20 Hz – 20 kHz, 0,05% THD. +0 / -0.5 dB, 10 Hz – 35 kHz	
Total harmonic distortion:	Less than 0.01%, 20 Hz – 20 kHz, 1.5V output (FLAT)	
Signal to noise ratio:	100 dB, 1.5 V output, IHF-A, input short	
Adjustable range:	±6 dB / ±12 dB	
Gain:	0 dB to -20 dB	

### [Oscillator section]

Step frequencies: 32 Hz, 64 Hz, 125 Hz, 250 Hz, 500 Hz, 1 kHz, 2 kHz, 4 kHz,  
8 kHz, 16 kHz  
Frequency response:  $\pm 1$  dB, 32 Hz – 16 kHz  
Output voltage: 150 mV

### [Mic. amp. section]

**Input:** Sensitivity: 0.2 mV  
**Frequency response:** Impedance: 50 kohms  
**Max. input:** +0 / -1 dB, 20 Hz - 30 kHz  
**Max. input:** 100 mV

### [Others]

AC outlet:	200 watts (UNSWITCHED)
Power supply:	AC120 V, 60 Hz
Dimensions:	435 (W) x 131 (H) x 362 (D) mm 17-1/8" x 5-3/16" x 14-1/4"
Weight:	5.7kg, 12.6lbs.

Specifications and features are subject to change without notice.

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